

H. VAN HOEVENBERGH.
Electro-Magnetic Engines.

No. 155,396.

Patented Sept. 29, 1874.

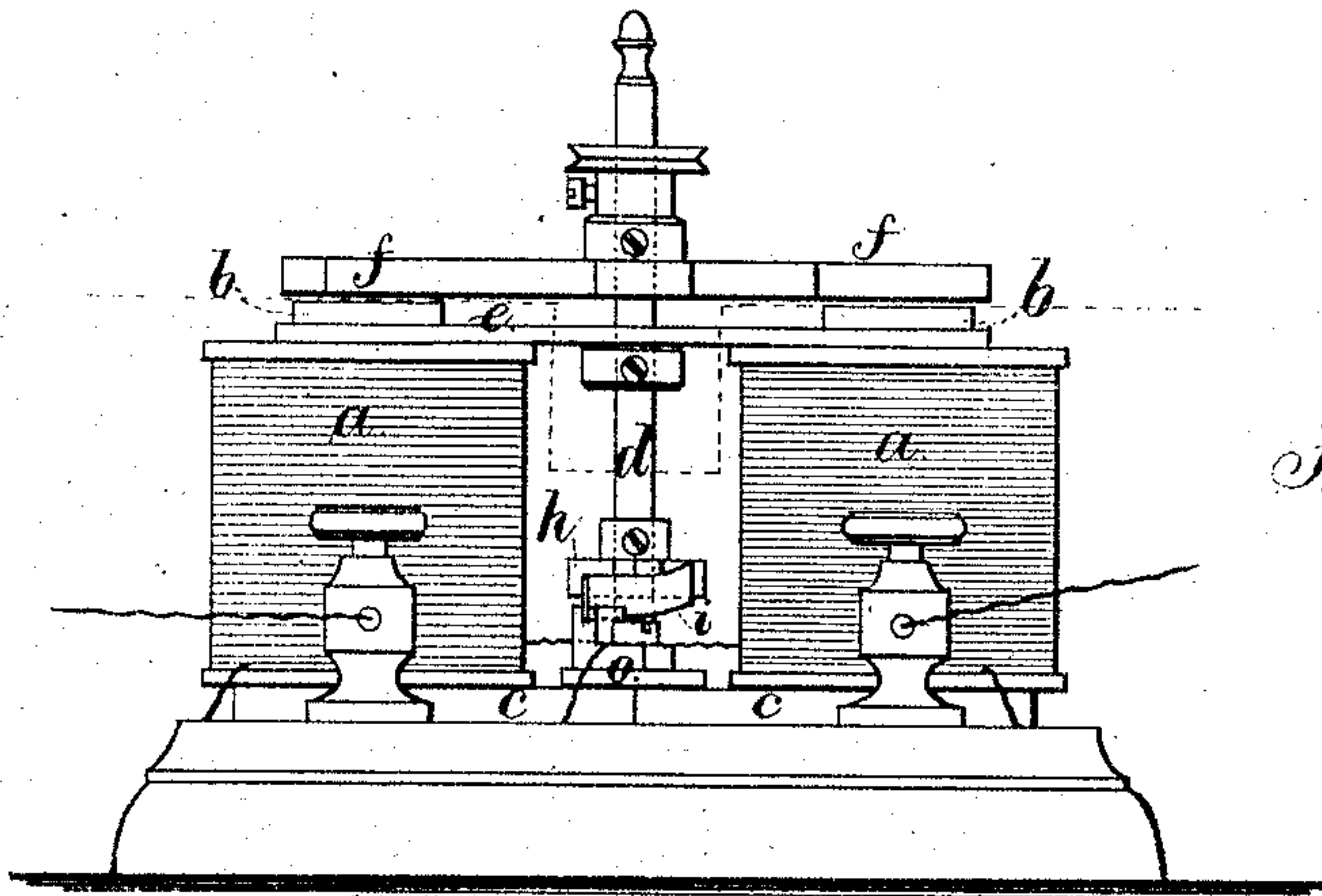


Fig. 2.

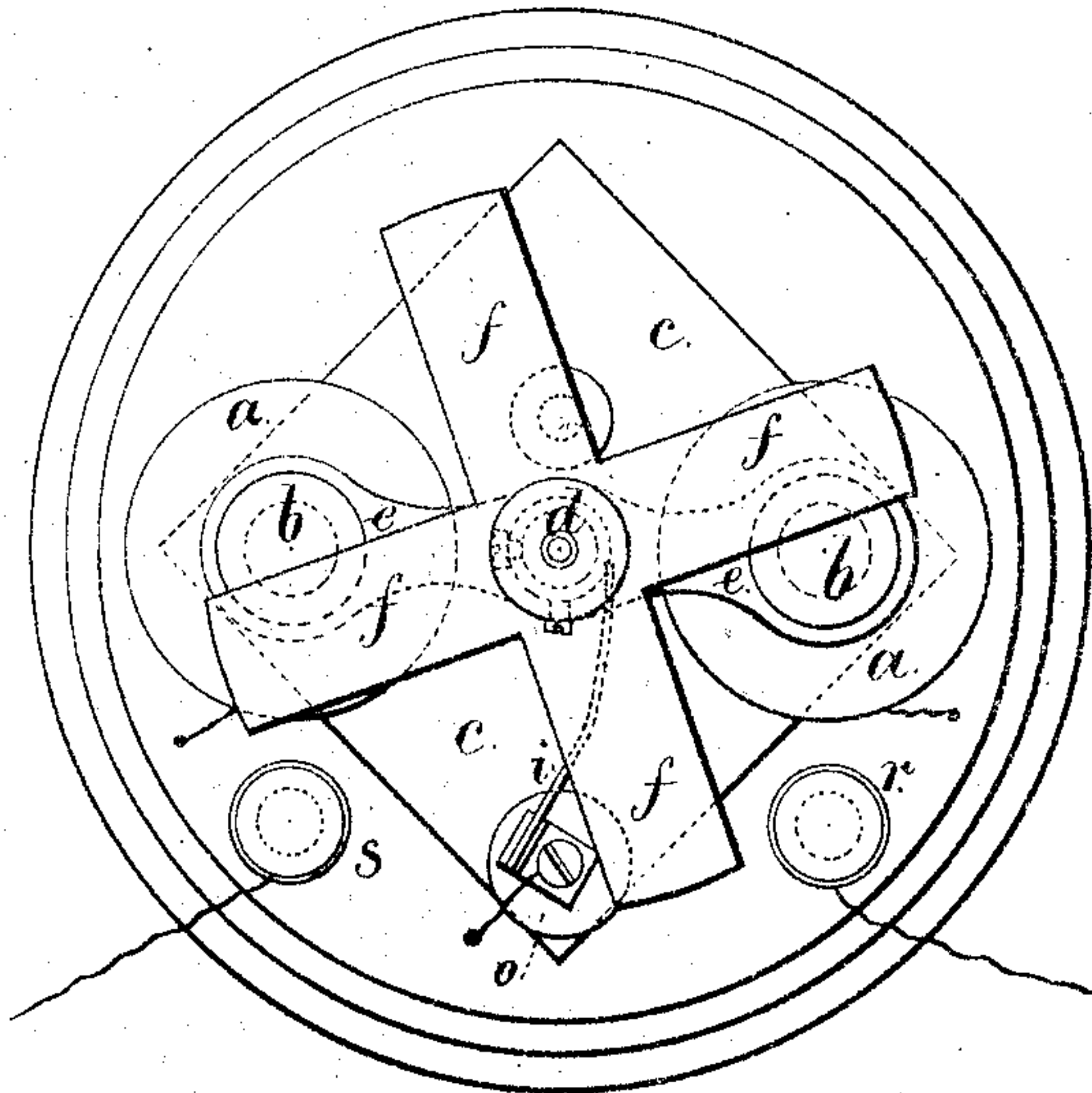


Fig. 1.

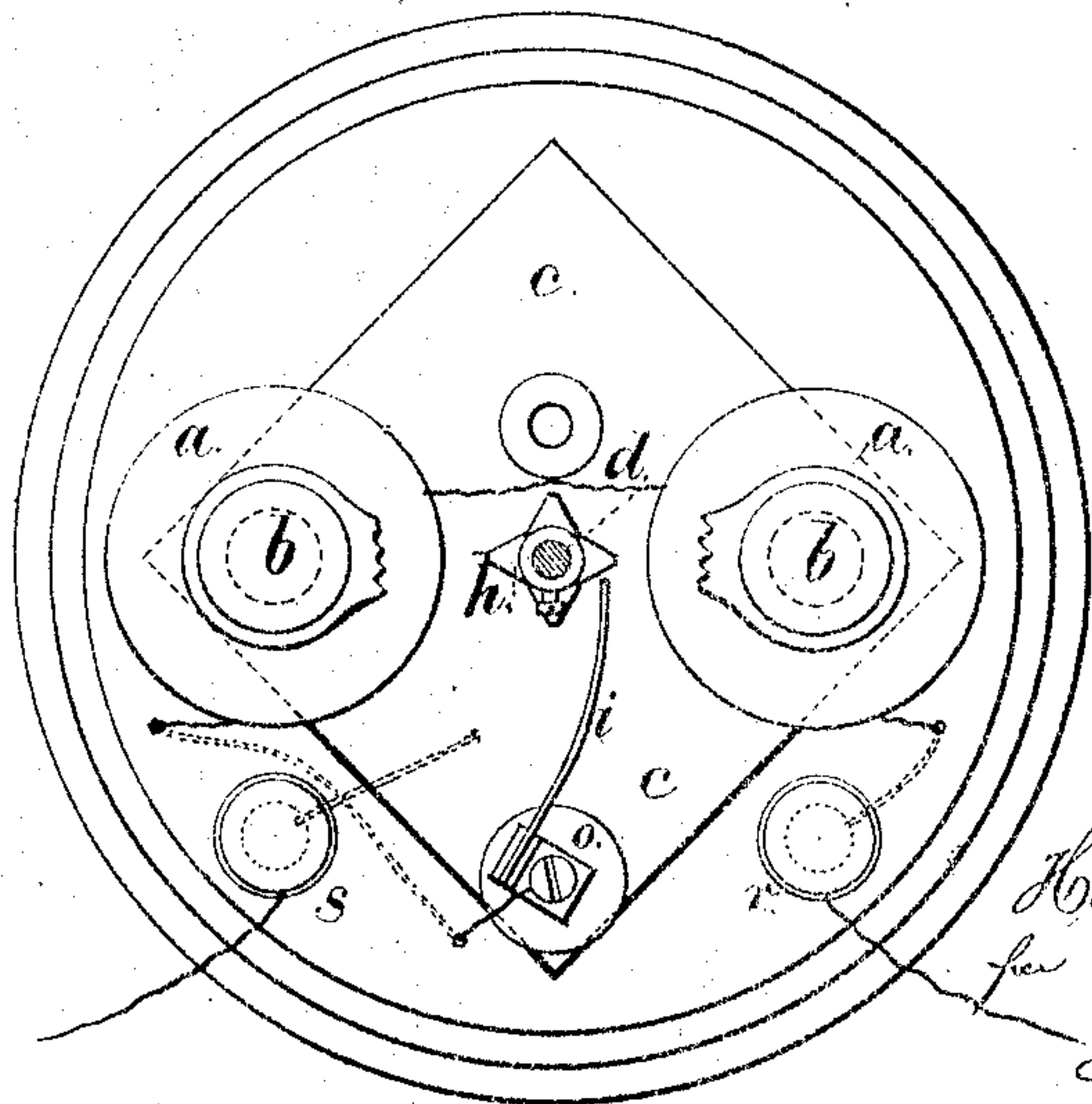


Fig. 3.

Witnesses,

Chas. H. Smith
Harold Lowell

Inventor

Henry Van Hovenbergh
per L. M. Lowell
att'y.

UNITED STATES PATENT OFFICE.

HENRY VAN HOEVENBERGH, OF ELIZABETH, NEW JERSEY.

IMPROVEMENT IN ELECTRO-MAGNETIC ENGINES.

Specification forming part of Letters Patent No. **155,396**, dated September 29, 1874; application filed May 27, 1874.

To all whom it may concern:

Be it known that I, HENRY VAN HOEVENBERGH, of Elizabeth, in the county of Union and State of New Jersey, have invented an Improvement in Electro-Magnetic Motors, of which the following is a specification:

Magnetic motors of various characters have been made, some with revolving armatures, and others with the magnets revolving. It is, however, usual to make and break the current to the different electro-magnets in succession.

My improvement is made for simplifying the construction, lessening the cost, and preventing the axis of the revolving armature becoming displaced.

I make use of one electro-magnet and a four-armed revolving armature upon a shaft provided with a circuit-closer or commutator, and this shaft passes through, and is supported by, a cross-bar, of brass or similar metal, having two end openings for the core of the electro-magnet, so that the cross-bar is supported by the magnet, and supports the shaft and revolving armatures in their correct positions in relation to the magnet.

In the drawing, Figure 1 is a plan of the instrument. Fig. 2 is an elevation, and Fig. 3 is a plan, of the commutator and connections.

The electro-magnet is made of the coils *a* and cores *b* connected to the plate *c*. *d* is a vertical shaft, resting at its lower end upon the plate *c*, and sustained by, and revolved within, the cross-bar *e*, of brass or other non-magnetic material, and this cross-bar has end openings, and sets over and around the upper ends of the cores, so as to be firmly supported by them.

This construction is simple, cheap, and avoids the frame that has heretofore been used, and is liable to be bent and displace the armature.

The star-shaped commutator-wheel *h* is upon the shaft *d*, and *i* is the spring attached to the insulating-block *o*, and to this spring *i* is connected one end of the magnet helix-wire, the other end of such helix-wire being attached to the binding-screw *r*, and the binding-screw *s* is connected to the plate *c*.

The spring *i* serves as a pawl to prevent the armatures and shaft revolving the wrong way, and when the current from a battery is applied the electro-magnet is energized and attracts the two arms of the armature, and the position of the commutator-wheel to the armatures is such that the circuit is broken as the armature arrives over the cores; hence, its momentum, accelerated by the action of the spring *i*, as the end runs down the incline of the commutator-wheel tooth, carries the armatures past the cores and brings the next pair of arms within the sphere of the magnetic attraction as the contact of the end of the next tooth closes the circuit again to the electro-magnet.

The spark being at the end of the spring, the same will not be liable to become inoperative by oxidation, as the contact surfaces, when the magnet is charged, are the point of the tooth and the side of the spring.

I claim as my invention—

The electro-magnetic motor composed of a four-armed armature upon a vertical shaft, that is sustained between the poles of an electro-magnet by the cross-bar *e* between the cores of the magnet, as and for the purposes set forth.

Signed by me this 23d day of May, A. D. 1874.

HENRY VAN HOEVENBERGH.

Witnesses:

GEO. T. PINCKNEY,
HAROLD SERRELL.